Remarks

Claims 1-28 and 54-55 are pending in the subject application. By this Amendment, Applicants have canceled claims 10, 11, 26, 27 and 55, amended claims 1-9, 12-25, 28, and 54, and added new claims 56-59. Support for the new claims can be found throughout the subject specification and in the claims as originally filed. For example, support can be found in paragraph 57 of the instant application. Upon entry of this amendment, claims 1-9, 12-25, 28, and 54, 56-59 will be before the Examiner. Favorable consideration of the pending claims is respectfully requested.

As an initial matter, Applicants gratefully acknowledge the Examiner's indication that claims 10, 11, 26, 27, 54, and 55 are objected to but would be allowable if rewritten into independent form to include the limitations of any base and intervening claims. Accordingly, claims 10, 11, 26 and 27 have been cancelled and rewritten as claims 56-59, wherein all of the limitations of the base and intervening claims are included. Claim 54 has been amended to include the limitation of its base claim and claim 55. Thus, Applicants respectfully request reconsideration and withdrawal of the objection.

Claims 1-5, 7-9, 12-15, 18-21, and 28 are rejected under 35 U.S.C. §102(b) as being anticipated by Kepert *et al.* (WO 99/05151). Applicants respectfully traverse this ground of rejection because the Kepert *et al.* application fails to teach each and every element of the claimed invention. Although the Kepert *et al.* application discusses (10,3)-a networks made by connecting polygons, the novel and advantageous structural polyhedra of the claimed invention are not disclosed or suggested. The Kepert *et al.* application merely discloses a possible crystalline framework wherein different polymers may be connected linearly via a metal atom.

It is well known that in order to anticipate, a single reference must disclose within the four corners of the document each and every element and limitation contained in the rejected claim. *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991).

Applicants submit that the Kepert et al. application fails to teach the faceted polyhedron discrete units. Specifically, it fails to teach that the linking moiety serves to connect two different polygon moieties at their corners and that the selection of the linking moiety influences the subtended angle between the two polygon moieties. Furtheremore, when one reviews the Kepert *et al.* application, including its figures, one sees polygon moieties that are connected at their edges. For example, Figure 4 illustrates one polygon. However, should the skilled artisan apply this polygon to

the remainder of the crystal, one would see cubic polygons connected at their faces, not at their corners. Furthermore, the lack of corner sharing means that the porosity of the Kepert *et al.* network is derived from other structural elements, for example, the interpenetrating networks. Thus, the Kepert *et al.* application fails to teach vertex linking at polygon corners. Since the Kepert *et al.* application does not teach each and every element of the claimed invention, it cannot anticipate. Accordingly, Applicants respectfully request withdrawal and reconsideration of this rejection.

Claims 1-5, 8, 9, 12, 17, 19-21, 24, 25, and 28 are rejected under 35 U.S.C. §102(b) as being anticipated by Kepert *et al.* (*Chem. Commun.*, 1998). Applicants respectfully traverse this ground of rejection because the Kepert *et al.* article fails to teach each and every element of the claimed invention. At most, the Kepert *et al.* article encompasses the same subject matter as the Kepert *et al.* application discussed above. For example, the article discloses a (10,3)-a network polymer. In contrast, the claimed invention is directed to a discrete unit. Also, the article fails to disclose structures wherein at least one linking moiety connects two polygon moieties at their corners. The claimed invention's novel approach to corner bonding or vertex linking of polygon moieties results in many and various ways to connect different polygons to obtain different porosities. The cited article, however, teaches a lattice work wherein porosity is derived from cavities interconnected via interpenetration of multiple (10,3)-a networks. Thus, the Kepert *et al.* article fails to teach all of the elements of the claimed invention, and it cannot anticipate. Applicants respectfully request reconsideration and withdrawal of this ground of the 35 U.S.C. §102(b) rejection.

Claims 1-5, 8, 9, 12-15, 17-21, 25, and 28 are rejected under 35 U.S.C. §102(b) as being anticipated by Yaghi *et al.* (U.S. Patent No. 5,648,508). The applicants respectfully traverse this ground of rejection because the Yaghi *et al.* patent fails to disclose each and every element of the claimed invention. Specifically, the Yaghi *et al.* patent fails to teach a discrete faceted polyhedron wherein porosity is derived from vertex linking of polygon moieties via linking moieties. Instead, the Yaghi *et al.* crystals consists of stacked alternating layers of Co-BTC and pyridine. Any voids in the resulting crystal are derived from the different layers (Col. 10, lines 55-59). The layers fail to approximate any type of polygonal shape. Regardless of how the layers are bonded together, Yaghi *et al.* still fails to teach two polygons linked at their vertices. Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §102(b) rejection over the Yaghi *et al.* patent.

Next, claims 1-5, 8, 9, 12, 17, 19-21, 23-25, and 28 are rejected under 35 USC §102(b) as being anticipated by Yaghi *et al.* (*Nature*, 1995). Applicants respectfully traverse this ground of rejection because the Yaghi *et al. Nature* article fails to disclose each element of the claimed invention. The compounds discussed in the *Nature* article are crystal lattices made with alternating layers of metal-organic compound with layers of a channel-forming composition that bonds to the metals in the surrounding layers. Removal of the channel-forming composition results in the channels surrounding the metal organic layer. The *Nature* article fails to teach polygon moieties connected at their vertices by linking moieties, and the Yaghi *et al.* crystal fails to exhibit an open facework. Instead any open areas are the channels within the latticework. Furthermore, these channels are not formed by the selecting the appropriate linking moiety to obtain a desired subtended angle. Rather these channels are formed from compounds or moieties that perpendicularly bind onto a metal site from the metal organic layer. Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §102(b) rejection over the Yaghi *et al. Nature* article.

Claims 1-5, 8, 9, 12, 19-21, 24, and 28 stand rejected under 35 USC §102(b) as being anticipated by Yaghi *et al.* (*J. Am. Chem. Soc.*, 1996). Applicants traverse this rejection because the Yaghi *et al.* article fails to teach polygon moieties linked at the vertices. The schematic representation of the Yaghi compounds illustrate that no polygon moieties are present. Although BTC is present in the compound, it is merely used to link metals. Furthermore, the subunit created by the metal/BTC linkages fail to suggest the claimed invention. These subunits are connected at their edges to form 2D polymeric layers. Furthermore, the compounds taught in this article are network polymers. Thus, a discrete macro-molecule is not taught. Because this article fails to teach discrete molecules and polygon moieties, the claimed invention is not disclosed. Thus, Applicants respectfully request reconsideration and withdrawal of this aspect of the 35 U.S.C. §102(b) rejection over the Yaghi *et al.* article.

Claims 1-5, 8, 9, 17, 19-21, and 28 are rejected under 35 USC §102(b) as being anticipated by Yaghi *et al.* (*Chem. Mat.*, 1997). Applicants respectfully traverse this rejection because the Yaghi *et al.* structure is not a faceted polyhedron. The Yaghi *et al.* article pertains to crystals constructed of many layers or sheets. Ethanol is bound within interstitial spaces between the layers. Specifically, the sheets are zinc carboxylates connected via pyridine. As discussed above in the other Yanghi *et al.* rejections, these multi-layered crystals fail to teach a discrete polyhedron. Thus, Applicants request reconsideration and withdrawal of the rejection

Claims 1-5, 8, 9, 12-15, 17-21, 24, and 28 next stand rejected under 35 USC §102(b) as being anticipated by Chui *et al.* (*Science*, 1999). Applicants traverse this ground of rejection because the Chui *et al.* reference fails to disclose the claimed invention. The Chui *et al.* article is directed to polymers, whereas the claimed invention concerns discrete macromolecules. Furthermore, there is no recognition within the teachings of the Chui *et al.* article that a discrete molecule could even be synthesized along with its disclosed polymer. Since the Chui *et al.* article fails to teach a discrete macromolecule, it fails to teach an element of the claimed invention. Accordingly, Applicants request reconsideration and withdrawal of this rejection.

Claims 1-5, 8, 9, 17, 19-21, 24, and 28 are rejected under 35 USC §102(b) as being anticipated by Zhang *et al.* (*J. Appl. Phys.*, 2000). Applicants respectfully traverse this 35 U.S.C. §102(b) rejection because the Zhang *et al.* article fails to teach each and every element of the claimed invention. Specifically, the Zhang *et al.* article is limited to polymers. There are no teachings or suggestions regarding how to make a discrete macromolecule with the claimed invention's elements. There is no suggestion or teaching that the Zhang *et al.* compound is a molecule. Since the Zhang *et al.* article fails to teach a discrete macromolecule, it fails to teach an element of the claimed invention. Accordingly, Applicants request reconsideration and withdrawal of this ground of the 35 U.S.C. §102(b) rejection.

Next, claims 1-6, 8, 9, 12-15, 17-23, and 28 are rejected under 35 USC §102(b) as being anticipated by Oshio *et al.* (*J. Phys. Chem.* 1995). Applicants respectfully traverse this ground of rejection because Oshio *et al.* fails to disclose each and every element of the claimed invention. Oshio *et al.* is directed to magnetic compounds wherein a metal is complexed with a ligand. Although the resulting compound may possibly take the shape of a trigonal bipyramid, the cited reference fails to teach or suggest the novel faceted polyhedra or compounds of the claimed invention. Specifically, the Oshio *et al.* reference fails to teach that a polygon moiety must be bonded at its vertex to another polygon moiety so that a faceted polyhedron is formed. This linkage is essential because vertex linking results in the faceted polyhedra whereby porosity is increased. Thus, the cited references fails to teach all of the elements of the claimed invention; accordingly, the applicants request reconsideration and withdrawal of the 35 §102(b) rejection over Oshio *et al.*

Claims 1-4, 8, 9, 12-15, 17, 19-21, 24, and 28 stand rejected under 35 USC §102(b) as being anticipated by Plater *et al.* (*Polyhedron*, 2001). Applicants respectfully traverse this ground of rejection because the cited reference cannot be considered a reference within the time limitations

imposed by 35 USC §102(b). The subject application has a filing date of February 25, 2002. However, the Plater *et al.* article was published in the August 15, 2001 issue of the journal *Polyhedron*. Applicants respectfully point out that the Plater *et al.* article was published within the one year preceding the filing date of the subject application. Therefore, the cited article is not available as §102(b) art. Furthermore, the subject applicant claims the benefit to provisional patent application no. 60/270,998, filed February 23, 2001 and provisional patent application no. 60/314,855, filed August 24, 2001. Accordingly, Applicants request withdrawal and reconsideration of this ground of rejection.

Claims 1-5, 12-14, 17, 19-21, 25, and 28 are next rejected as being anticipated by Wu *et al.* (*Inorganic Chem. Commun.*, 2001). Applicants respectfully traverse this ground of rejection because the cited article has a publication date after the critical date of the subject application. The subject application was filed February 25, 2002. Furthermore, the subject applicant claims the benefit to provisional patent application no. 60/270,998, filed February 23, 2001 and provisional patent application no. 60/314,855, filed August 24, 2001. Applicants respectfully point out that the Wu *et al.* article was published in the October, 2001 issue, after the critical date of the subject application. Accordingly, Applicants request withdrawal and reconsideration of this ground of rejection.

Next, claims 1-5, 8, 9, 12-15, 17-21, 25, and 28 are rejected as being anticipated by Shi *et al.* (*Polyhedron*, 2001). Applicants respectfully traverse this ground of rejection because the cited reference cannot be considered a §102(b) reference. The subject application has a filing date of February 25, 2002. However, the Shi *et al.* article was published in the December 15, 2001 issue of the journal *Polyhedron*. Applicants respectfully point out that the Shi et *al.* article was published within the one year preceding the filing date of the subject application. Therefore, the cited article is not available as §102(b) art. Furthermore, the subject applicant claims the benefit to provisional patent application no. 60/270,998, filed February 23, 2001 and provisional patent application no. 60/314,855, filed August 24, 2001. Accordingly, Applicants request withdrawal and reconsideration of this ground of rejection.

Finally, claims 1-7, 17-21, and 28 are rejected under 35 USC §102(b) as being anticipated by Bourne *et al.* (*Angew. Chem. Int. Ed.*, 2001). Applicants respectfully traverse this ground of rejection because the cited article is not available as a §102(b) reference. The subject application has a filing date of February 25, 2002, whereas the Bourne *et al.* article was published in the May 2001 issue.

Furthermore, the subject applicant claims the benefit to provisional patent application no. 60/270,998, filed February 23, 2001 and provisional patent application no. 60/314,855, filed August 24, 2001. Accordingly, Applicants request withdrawal and reconsideration of this ground of rejection.

It should be understood that the amendments presented herein have been made solely to expedite prosecution of the subject application to completion and should not be construed as an indication of Applicants' agreement with or acquiescence in the Examiner's position. Applicants expressly reserve the right to pursue the invention(s) disclosed in the subject application, including any subject matter canceled or not pursued during prosecution of the subject application, in a related application.

In view of the foregoing remarks and amendments to the claims, Applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

Applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

Jenna M. Morrison
Patent Attorney
Registration No. 55,468
Phone No.: 352-375-8100
Fax No.: 352-372-5800
Address: P.O. Box 142950
Gainesville, FL 32614-2950

JMM/amh
Enclosure: Amendment Transmittal Letter